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Mathematical modeling of dispersion of argillaceous minerals in mudded oil reservoir beds

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Abstract

The reasons for the technogenic decrease in the filtering capacity of oil reservoirs are considered. It is shown that the processes of transformation of the structure of argillaceous minerals are determining in this case. They lead to the dispersion of argillaceous aggregates and the segregation of smectite and mica components. The latter, being carried by a fluid flow and being mechanically fixed on the inhomogeneities of the pore channels, can form a reverse electroosmotic flow (retarding filtration) due to the high surface charge having no time to be compensated for. A mathematical model of the process has been constructed. The results of the calculations are presented.